

## Planning of Maternity Sections of General Hospitals

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A WELL-planned maternity section is one in which its technics may be carried out easily, efficiently, and with a minimum of risk; it is one in which obstetrical technics are successfully translated into rigid and permanent building materials.

The basic influence on the plan is that of isolation—contagious disease isolation in reverse, if you will—isolation not to prevent the spread of a disease from the isolated sick patient to a healthy one, but to protect the isolated healthy mother and baby from the congregation of sick people gathered within our hospital walls; from supposedly healthy individuals—nurses, doctors, visitors and so forth, and from air-borne infections. The problem is complicated by the need for separating from the others an occasional mother or baby or both with either suspicious or positive symptoms of something that might endanger the others. To add to the difficulties, there is the regular and possibly hazardous parade of the baby from nursery to mother and back again. But strict isolation, legally sanctioned for the contagious patient, is hardly applicable to the mother and her baby.

The simplest way to avoid dangers of infection from other patients is not to have any others; but a separate building for obstetrics is rare even at the large general hospitals. Many question whether the advantages of separation are not counterbalanced by the disadvantages of a separate building. If maternity patients are to be cared for within the envelope of a general hospital, the obstetrical unit must be well segregated from all other patients; it must not be a passage or a short cut for either visitors or personnel. The plans of the hospital and the size of the maternity service will determine whether a separate wing, a floor or floors, or a part of a floor is best suited for the peculiar needs of this division. The area chosen must be sufficient to care for the expected number of mothers, their babies, and the birth rooms.

Since maternity patients must be segregated from all other patients according to present-day standards (and the laws in some states) its corollary must not be overlooked—that other kinds of patients cannot be placed in the obstetrical unit. So an accurate estimate of the number of beds assigned to the section becomes extremely important. Unlike some other services, few cases can be postponed—in fact, a large proportion are genuine emergencies. This, coupled with a wide fluctuation in need for beds, make the “sizing” of the segregated Maternity Department very difficult. “Averages” mean little when the peaks arrive, for yesterday’s empty beds are gone forever. Cutting down the stay of the patients is hardly a satisfactory answer, and overcrowding tends to break down the safeguards set up. So the hospital that expects to give good maternity service must look forward to a low percentage of occupancy.

The quarters for the maternity case differ little from those for other patients so, as time is limited, I will skip any comment and proceed to the two unique divisions of the maternity service, the Birth Department and the Nursery.

The Birth Department is an Operating Department—with complications. The expectant mothers who benefit from its perfection are not brought to the Department for an hour or two as in surgery—they may be there for 48 hours or

more; very often they are brought there directly from home without a moment for any preliminary cleaning-up, laboratory analysis, and so forth. So the busy Birth Department must combine in one the hustle and hazards of an accident service with the super-sterile service of the Operating Department. To further complicate matters, the husband is often permitted to visit his wife during her time in the labor or predelivery rooms, and yet must be kept out of the birth rooms.

Opinions vary about many details of the Birth Department but there is unanimous agreement that it must be a "terminal" unit, one so located that there need never be any reason to enter it except on business directly connected with it. The number of birth and labor rooms in proportion to beds varies greatly and will be detailed when the slides are shown. As the departments grow smaller, the number of labor and birth rooms tends to become equal for a delivery room makes a good labor room but a labor room is too small to make a good delivery room.

Opinions differ about the need for a preparation room, one in which the patient is prepared by bath, enema and other procedures for the labor room. The large department usually has one, and many hospitals with only 20 to 30 beds consider them indispensable. This room usually has a large shower, a water closet, a preparation table, lockers for the clothes of the mother who hasn't time to get to her room, a surgeon's lavatory, a supply case, and miscellaneous equipment needed for the preparation of the patient.

The labor rooms ordinarily have but one bed in them. A satisfactory area is about 130 to 150 square feet with the smallest dimension about eleven feet, a size that permits unobstructed access to three sides of the patient's bed. A scrub-lavatory is a "must" for obvious reasons. Lighting should have a great deal of flexibility, from the low intensities of a night light to the bright intensity of an over-head light supplemented by a spot light. Furniture is usually limited.

The birth room has so recently been liberated from its cubbyhole that the thinking about it seems to be markedly conditioned by "its previous condition of servitude," especially so in determining its size. Birth rooms have all of the equipment and all of the personnel of major operating rooms and sometimes more. Probably 16 by 20 feet is the minimum satisfactory area. Its finish and detail is comparable to that of a major surgery. Suction apparatus of some kind is desirable. Artificial lighting does not often receive the emphasis it receives in the surgery. As anesthetic gases will be used, suitable precautions should be taken to prevent explosions, if anyone can find out what they are. Some prefer to scrub in the birth room, others in a separate scrub room.

If the Birth Department is not on the same floor with patients' rooms, then a tiny pantry with refrigerator, sink and space to set up trays is necessary to provide nourishments and food to those in the labor rooms. Bed pans from the labor rooms should preferably be emptied into a bed pan washer in a sink close to them. The size and detail of rooms for the preparation of dressings, sterilization, and so forth, depend not only on the work expected in the department but also on its relation to the central sterilizing unit of the hospital. The minimum is a single room; the maximum is the self-contained and completely equipped unit to be found in the Chicago Lying-in Hospital.

The obstetrician must have a place to prepare himself for the birth rooms, preferably with lockers, a shower, toilet and wash basin. This locker room should



be large enough to also act as a lounge room during the obstetricians' sometimes lengthy vigil, and if possible, it should be supplemented by a quiet room in which he can snatch a few minutes' sleep.

Bearing in mind the frequent trips of the babies to the mothers, the Nursery should be as centrally located as possible. Usually, too, it must be so located that visitors may see the babies from outside the Nursery.

The objective of nursery planning, isolation of susceptible infants from infection, is easy to state but extremely difficult to put into operation. Its fundamental basis is an unbroken aseptic nursing technic. So, in come the gowned and masked nurses, out go the visitors during feeding periods, and finally even the doctors are barred from the Nursery. The preparation and handling of feedings, water, linen, and so forth, are surrounded by precautions worthy of the best surgeries. Many laws, and some of them are being enforced, set up minimum standards: 20 square feet and 200 cubic feet or more for each infant. Individual equipment for each baby with cribside care of the infant are often provided and sometimes required by the health authorities. The quarters for the babies vary widely from the individual roomette to the large congregate nurseries of 50 or 60 cribs; but in all large nurseries there is an effort to break them into smaller parts. Sometimes each baby has its own cubicle, in others the cubicle unit is six to ten babies, in still others, the babies are housed in separate nurseries with common service rooms. In many, however, there is no attempt to install physical barriers, dependence being placed on the distance between cribs, usually required to be not less than six inches.

Hand washing facilities, with aseptic controls on the valves must be provided and, bearing in mind their frequent use, they must be close to the babies. The Nursery must have a spare supply of linen, and so forth, in conveniently located cupboards or closets; it must have a refrigerator for storing feedings, a method of heating the feedings and water. Provision must be made for disposal of soiled linen. Space must be provided for record keeping. Sometimes this is combined with the Doctor's examining room, ordinarily only large enough for a small examining table, the physician, the nurse, a small case for supplies and instruments, a surgeon's lavatory and a table for sterile gowns, and so forth.

The formula preparation room is usually elsewhere in the larger hospitals, but must sometimes become a part of the nursery unit in the smaller ones. The requirements are a refrigerator, sink, pressure sterilizer, often a water sterilizer, and cupboards and work table space, all capable of being kept scrupulously clean.

The care of the premature is often a function of the Newborn Nursery as long as the mother is in the hospital and provision for incubators must be made for them either in the Nursery or in a room adjoining. Only in the larger units are separate premature nurseries planned.

Many hospitals elect to give the mothers a demonstration on the care of the infant, and many are the ways of doing so. A simple method is to seat the mothers in the corridor or other space adjacent to the display window and give the lecture in the Nursery, using a two-way microphone system for voice transference. Another method uses an enlarged examining room.

Showing the babies to friends and relatives involves many difficulties when the nurseries are large and the mites are a long way from the window. Many ingenious methods of doing this have been suggested and some will be shown later. In only one instance that I know about is the nursery without show

windows, and it seems to get by without difficulty. Obviously, there must be a means of letting the nurse know what baby is wanted; the simplest is a "speak" hole in the partition in the glass; the safest and still an inexpensive way is the controllable two-way microphone.

A necessary supplement of the clean nursery is the "suspect" nursery as I

Figure 1

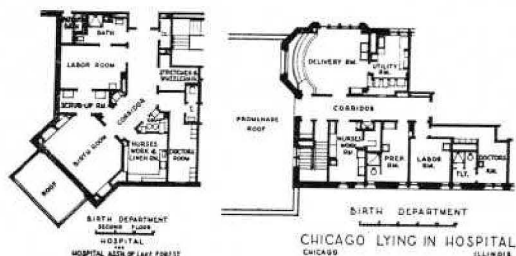


Figure 2

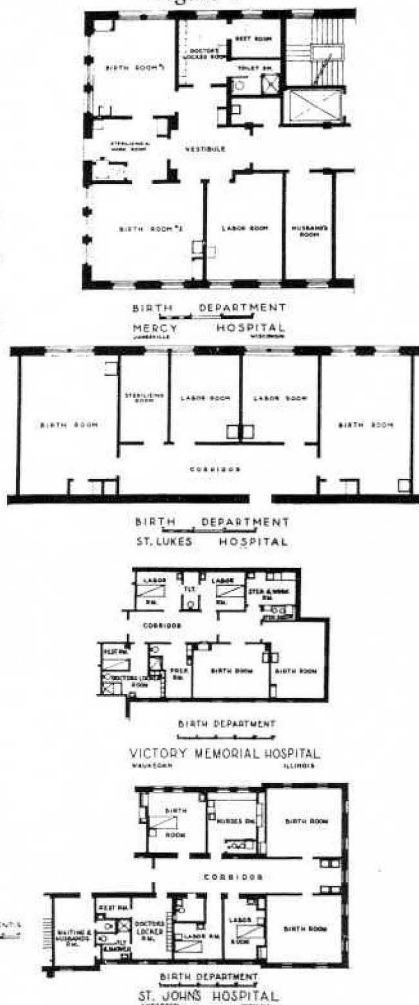


Figure 3

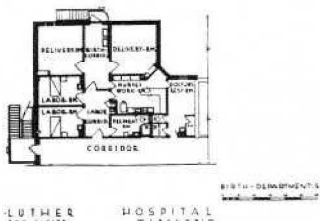


Figure 4

prefer to call it, the place to which babies with suspicious signs are removed. Those with definite indications of infections are usually removed from the maternity to some other part of the hospital. The requirements of the "suspect" nursery differ very little from the main nursery. As a precautionary measure it should be cubicled if intended for more than one baby; a scrub-up lavatory and a hot plate are essential bits of equipment. The "suspect" nursery is rarely a part of the main nursery group.



Discussion of details of finish and equipment of birth departments and nurseries must be omitted, but a few words must be said about noise control, air conditioning and bactericidal light.

Noise control in the nursery and birth department is not difficult; many are the materials that can be placed on the ceilings to do this job very well. Then, if the corridor ceilings are likewise treated a very satisfactory result is obtained at a fairly low cost. If it is possible to avoid putting a patient's room next to a nursery, a birth or a labor room—and it usually is—then there is little necessity for sound insulating partitions.

Air conditioning is being used with increasing frequency in the Birth Departments and in the Nurseries; in the Birth Departments for comfort of the

Figure 5

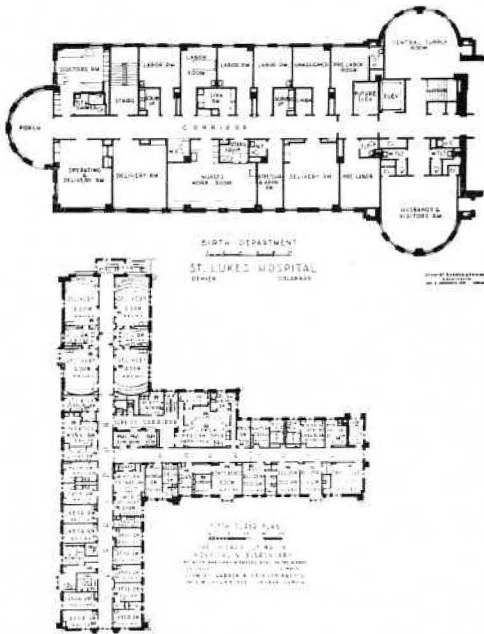


Figure 7

Figure 6

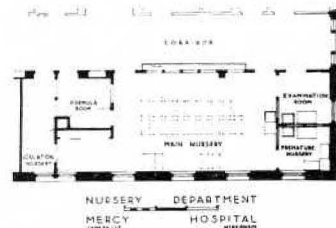
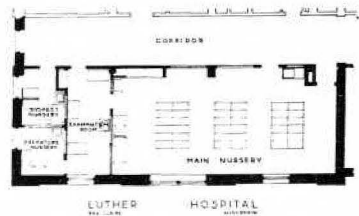
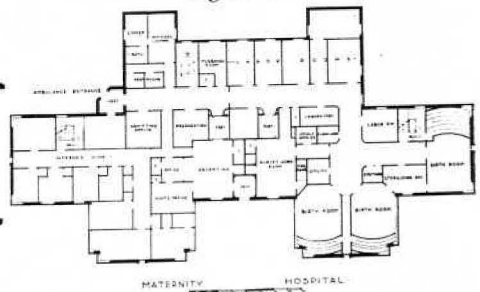


Figure 8

patients during their trial, and in the Nurseries largely to insure adequate ventilation, control of humidity during the heating season, and only incidentally for its cooling during the summer. Some codes make such air conditioning expensive both in operation and installation because they require that no air shall be recirculated. In theory it can be demonstrated that this restriction is desirable, whether it is so in practice is another matter.

The bactericidal light has received a lot of attention in the last couple of years. It is no panacea for either nursery or birth room infections for it cannot

take the place of aseptic technic. It apparently can give a satisfactory result on air-borne infections if installed in the right manner and of proper intensity.

With this in mind, let us look at the plans of a number of birth departments and nurseries, selected to illustrate a number of sizes.

Figure 9

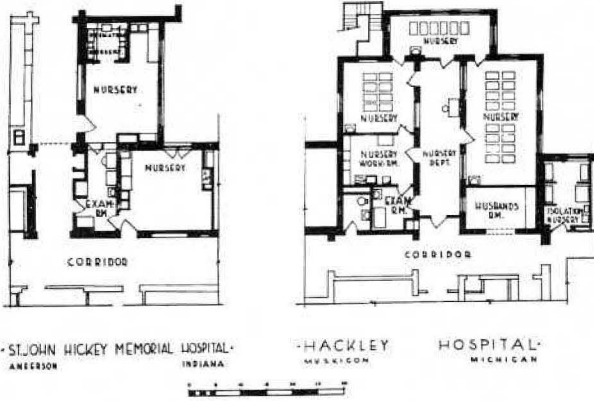


Figure 10

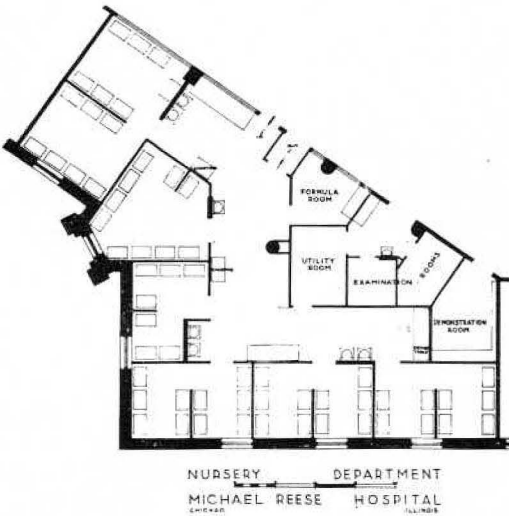
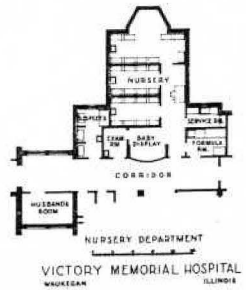
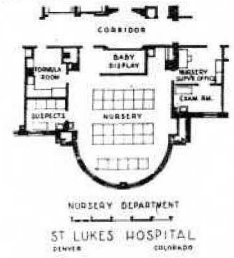


Figure 11

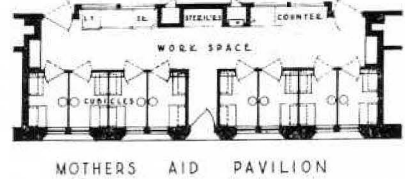


Figure 12

Figure 1 illustrates two small birth room units, each with a birth and a labor room and designed for a bed capacity of ten to 20 beds. Both have every element of the largest departments. Each uses about 1600 to 1700 square feet of area (including enclosing walls). How much smaller than these can a birth department be? Obviously, the basic element is the birth room with an instrument sterilizer. But some figures from the 23 bed department of the Protestant Deaconess Hospital of Evansville, Indiana, are interesting for they show the wide fluctuations in needs. Their peak has been nine births in 22 hours, their

lowest none; they will have a day with one or two, then suddenly jump to five, six and seven in 24 hours—all to reach a peak month of 90 births, or an *average* of but three per day. Perhaps the best we can do is care for the average, and do the best that is possible with the peaks.

Figure 2 shows two birth rooms and two labor rooms: for 25 mothers at Janesville's Mercy Hospital, and for 30 for the private patients' group at Chicago's St. Luke's. Both are recent remodelings of existing buildings. The Janesville department is at the end of the maternity floor, but that at St. Luke's is isolated to one side of the corridor, an arrangement possible only when there is 18 or 20 feet between the corridor and outside wall as in this case. Even then, it was necessary at St. Luke's to provide for doctors and prepare patients outside the birth department proper.

Each of the floor plans shown in Figure 3 have two birth and two labor rooms for about 30 mothers' beds; the group at Luther is in a new wing, while that at Hackley fits into an existing building. Either of these departments could anti-



Figure 13

cipate an average month of about 75 births or two and one-half per day if we assume an 80 per cent occupancy and an average of ten days stay for the mother. If this is so, one of the delivery rooms will no doubt frequently be pressed into service as a labor room. Note that Hackley has a husbands' lounge close to the birth rooms, and the one at Luther's is not shown, being 100 feet away, illustrating two opposing schools of thought on this problem.

A recently completed department for the 30 bed unit at Waukegan's Victory Memorial, and the remodeling proposed for the 40 bed unit at Anderson's St. John's are shown in Figure 4. The first has two birth and two labor rooms; the second three birth and two labor rooms. Both are isolated in terminal units.

In Figure 5, plan of the unit now under construction at St. Luke's, Denver, three birth rooms and six labor rooms are intended for a maternity division of



In Figure 12 are the floor plans of the suspect nursery and the isolation nursery in the Chicago Lying-in. The suspect nursery is cubicled but each isolated baby has a tiny roomette in the unit with the area adjoining as a service and anteroom.

The arrangement at The Cradle, which is not a hospital but a child placement institution is shown in Figure 13. The babies come here shortly after birth and remain for about eight to twelve weeks. The 36 babies on this floor are divided into three units of twelve each. Each baby has an area four and one-half by six and one-half feet with complete equipment including scrub lavatory. The technic has been very carefully studied and is carried out identically in each unit. In the Reynier unit, each baby has its own roomette; each baby is separated from every other one by partitions. In the Wells unit each baby has exactly the same area but the partitions are of ultra-violet light. In the third or control unit the babies have exactly the same equipment and floor space but only railings separate them from one another. All units are fully air conditioned. The result of two years careful observation were published in a recent number of the *Journal of American Medical Association*. The respiratory infections were the same in the partitioned (Wells and Reynier) units, and both were less than in the control unit.

It is quite evident from the plans we have seen the directions in which the obstetricians, pediatricians and public health authorities are moving: first, segregation of maternity patients from all others; second, limitation of visiting;

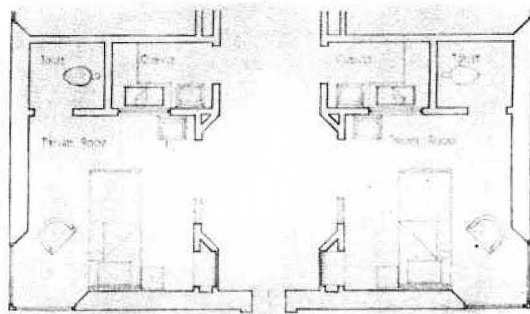


Figure 14.

third, smaller patients' units; fourth, grouping of newborn in smaller units. Recently it was proposed that all of these should be carried further, that patients brought to the hospital truly be in confinement, through limited visiting by not more than two, each patient to have an individual unit with its own service room, and that the baby be kept in an adjacent roomette opening into the corridor for nursery service and with a wicket into the mother's room. Thus, at one swoop, mother and baby are isolated, and yet close together. It is still only an idea; perhaps there are flaws in it; and perhaps, too, it is worth thinking about (see Figure 14).